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**PATENT SPECIFICATION**



Application Date: July 25, 1935. No. 21206/35.

**460.040**

Complete Specification Left: Aug. 25, 1936.

Complete Specification Accepted: Jan. 20, 1937.

PROVISIONAL SPECIFICATION

**Improvements in and connected with the Laminated Magnetic  
Cores used in Dynamo Electric Machinery**

I, ANDREW ALLISON, of British Nationality, of 18, Rabone Lane, Smethwick, Birmingham, do hereby declare the nature of this invention to be as follows:—

This invention relates to the fixing or fitting of the laminated magnetic cores used in dynamo electric machinery, and has for an object to provide an improved method of holding such cores securely and tightly in their working or normal position in such manner that they may be easily removed when desired. While the method of fitting and holding the cores is particularly applicable to the rotor cores of squirrel cage induction motors the invention is by no means limited to this application and may be used for either rotating or fixed cores.

Broadly stated, the invention consists in providing around the fitting edges of the punchings or laminations of the core substantially radially extending slots adapted to permit bending of the punchings or laminations near the fitting edges out of their own planes along lines extending between the bottoms of the slots so that by bending the portions around the fitting edges of the laminations or punchings may be slid easily over the shaft or the like on which they fit, while by applying pressure to such bent portions the bends may be straightened out and the laminations or punchings caused to grip the shaft or the like securely.

In assembling the cores on the shaft or the like they are slid onto the shaft with

the portions adjacent the fitting edges bent. The assembled punchings or laminations are then clamped between flat ended clamping plates as a result of which the bent portions are straightened out and the fitting edges grip the shaft or the like securely. To remove the assembled laminations or punchings a clamping plate with a boss or shoulder of substantially the dimensions of the bendable portions is fitted over the shaft instead of a flat plate and a bolt or bolts passed through the plates and tightened. The boss or shoulder transmits the pressure to the bendable portions of the laminations and they are all again bent out of their planes permitting of withdrawal of the punchings or laminations on removal of the clamping plates.

One of the clamping plates may be provided with tapped holes engageable by the bolts for tightening the laminations on the shaft or the like and such plate may have slots engageable by the heads of bolts when the laminations are to be bent again. One of the clamping plates may be formed with a boss or shoulder on one side so that it need only be reversed on the shaft for use in straightening the bent portions of the laminations.

Dated this 25th day of July, 1935.

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and

86, St. Vincent Street, Glasgow,  
Agents for the Applicant.

COMPLETE SPECIFICATION

**Improvements in and connected with the Laminated Magnetic  
Cores used in Dynamo Electric Machinery**

I, ANDREW ALLISON, of British Nationality, of 18, Rabone Lane, Smethwick, Birmingham, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

This invention relates to the fixing or fitting of the laminated magnetic cores

used in dynamo electric machinery, and has for an object to provide an improved method of holding such cores securely and tightly in their working or normal position yet in such manner that they may be easily removed when desired. While the method of fitting and holding the cores is particularly applicable to the rotor cores of squirrel cage induction motors the

invention is by no means limited to this application and may be used for either rotating or fixed cores.

Broadly stated, the invention consists in providing around the fitting edges of the punchings or laminations of the core slots adapted to permit bending of the punchings or laminations near the fitting edges out of their own planes along lines extending between the bottoms of the slots so that by bending, the portions around the fitting edges of the laminations or punchings may be slid easily over the shaft or the like on which they fit, while by applying pressure to such bent portions the bends may be straightened out and the laminations or punchings caused to grip the shaft or the like securely.

The invention is illustrated somewhat diagrammatically in the accompanying drawings in which Fig. 1 is a cross section through a shaft or the like with the punchings or laminations of the core assembled thereon.

Fig. 2 is an end view partly in section. Fig. 3 is a view similar to Fig. 1 but showing the method of removal of the punchings or laminations.

Fig. 4 is a modification showing in cross section a further method of assembly and removal of the punchings or laminations of the core.

Referring to Figs. 1 to 3 of the drawings, 1 denotes the shaft on which the punchings or laminations 2 of the core are to be mounted. The punchings 2 are provided at their inner edge 3 with a plurality of radially extending slots 4 which permits of the edge portions 5 of the punchings 2 being bent along lines indicated by the chain dotted lines 6 extending between the bottom of the slots 4. The punchings 2 are also provided with holes 7 for the passage therethrough of the body of studs 8. The punchings 2 are clamped between the clamping plates 9, 10, the plate 9 of which is provided with tapped holes 11 for the engagement of the ends of the studs 8 and with slots 12 for the reception of nuts 13, for use when the punchings 2 are to be bent again. The studs at their other ends are provided with locking nuts 14. The plate 10 is provided with holes 15 allowing free passage for the studs 8. As shown, one face of the plate 10 is plane while the other face has a shoulder or boss 16 approximately of the same depth as the slots 4.

In assembling the cores on the shaft or the like the punchings 2 are slid onto the shaft with their edge portions 5 adjacent the fitting edges 3 bent. The clamping plates 9 and 10 are fitted over the shaft in the position shown in Fig. 1, the nuts 13 are inserted in the recesses 12 and the

studs 8 screwed into the nuts 13 and plate 9. The assembled punchings or laminations 2 are thus clamped between flat ended clamping plates 9, 10 as a result of which the bent portions 5 are straightened out and the fitting edges 3 grip the shaft 1 or the like securely as shown in Fig. 1. To remove the assembled laminations or punchings 2 the locking nuts are removed and the studs 8 unscrewed until the nuts 13 which engage the slots 12 in the plate 9 are free to move towards the lamination through the clearance space provided in the plate 9. The face plate 10 is then reversed and the locking nuts replaced and tightened. The boss or shoulder 16 transmits the pressure to the bendable edge portions 5 of the laminations and they are all again bent out of their planes as shown in Fig. 4 permitting of withdrawal of the punchings or laminations as shown in Fig. 3.

The arrangement shown in Fig. 4 differs from that shown in Figs. 1 to 3 in that the punchings or laminations 2 are not provided with apertures 7 for the reception of bolts 8.

In this arrangement the shaft is provided with a shoulder 17 against which abuts one of the clamping plates 9 while a portion of the shaft is threaded as at 18. The punchings or laminations 2 are placed over the supporting shaft or rotor 1 in the manner described with reference to Figs. 1 to 3, the locking nuts 14 being tightened to straighten out the edge portions 5 which ensures that the fitting edges grip the shaft or the like securely.

In this arrangement the laminated core may be removed by applying pressure in the directions indicated by the arrows 19 thus rebending the edge portions and permitting removal of the core.

While I have shown the slots 4 as extending radially of the laminations in the several figures of the drawing they may be skewed. In the constructions shown in Figs. 1 to 3 the large bolt holes 7 permit slight movement of the punchings or laminations which will occur in straightening the laminations of the core due to the skewed disposition of the slots.

It has hitherto been suggested to provide a core for an armature consisting of a number of corrugated discs provided with hexagonal holes disposed between end plates, the core being expanded by longitudinal compression and/or by a split bush having a taper bore and a hexagonal exterior.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is:—

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1. A method of assembling laminated magnetic cores for use in dynamo electric machinery on a shaft or the like which comprises threading such laminations or punchings on the shaft or the like with their fitting edges bent out of their own plane and applying pressure to the bent portions of the laminations or punchings whereby the bends are straightened out and the laminations or punchings are caused to grip the shaft or the like securely.
2. A laminated core for use in dynamo electric machinery in which the laminations or punchings are provided with slots extending from their fitting edges so as to permit bending of the laminations or punchings near such fitting edges out of their own planes.
3. A laminated magnetic core as claimed in claim 2 in which the punchings or laminations are provided with apertures for the reception of bolts which provide in association with a pair of clamping plates means for applying pressure to straighten the bent fitting edge portions of the laminations or punchings.
4. A laminated magnetic core as claimed in claim 3 in which one of the clamping plates is provided with a shoulder or boss adapted for use in re-bending the edge portions.
5. A laminated magnetic core as claimed in claim 2 in which the shaft or the like on which the core is mounted is provided with a shoulder against which one of the clamping plates may abut, pressure being applied to the bent fitting edges of the laminations or punchings by means of a second clamping plate adapted to move under the action of a nut threaded on the shaft or the like.
6. A method of fixing or fitting the laminated magnetic cores of dynamo electric machinery substantially as described with reference to the accompanying drawings.
7. A laminated magnetic core for use in dynamo electric machines constructed and arranged substantially as described with reference to the accompanying drawings.

Dated this 25th day of August, 1936.  
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86, St. Vincent Street, Glasgow,  
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[This Drawing is a reproduction of the Original on a reduced scale.]

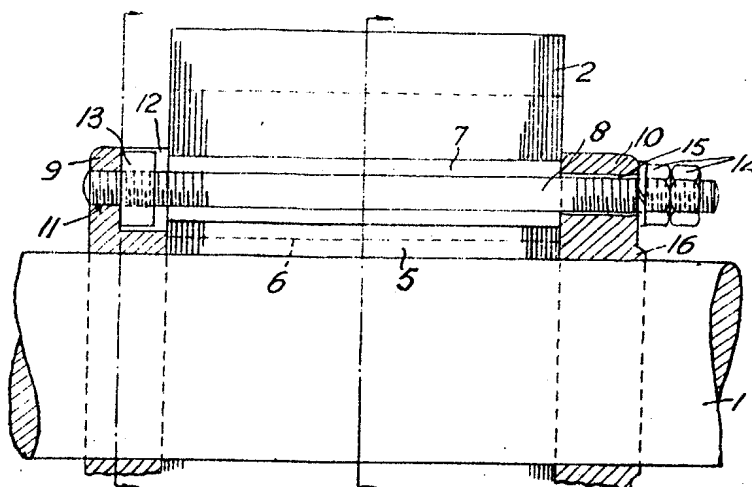


FIG. 1.

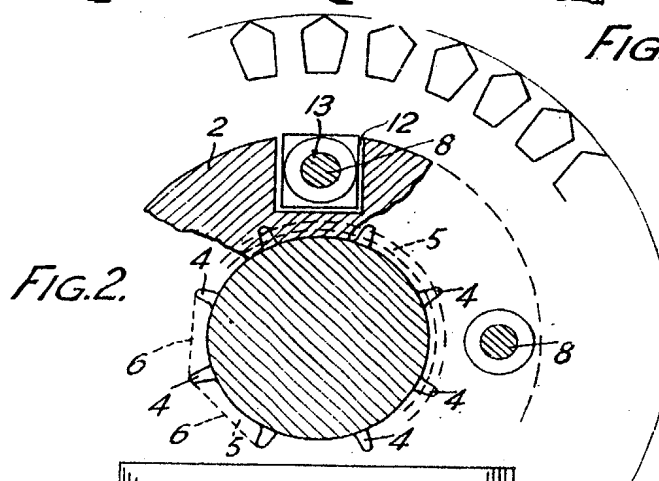


FIG. 2.

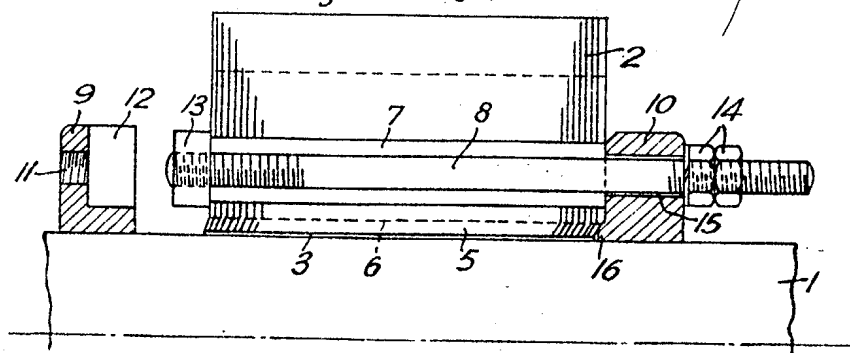


FIG. 3.

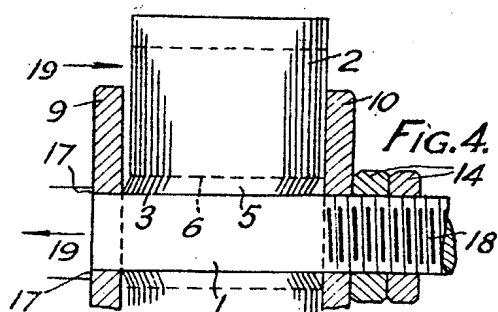


FIG. 4.